MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2018 / 2019

LCT2017 – COMMUNICATION TECHNOLOGIES

(All Groups)

17 OCTOBER 2018
2:30 P.M. – 4:30 P.M.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **2** printed pages with **1** section only.
2. Answer **ALL** questions.
3. Write all your answers in the Answer Booklet provided.

COMMUNICATION TECHNOLOGIES (40 MARKS)

Instructions: Answer all questions

1. Technology presents organisations with various communication tools which include email, visual communication "share point", mobile phones, internet and others. It is up to the business owners to know how to utilize these technologies and improve their performance.
   i) Identify four possible uses of technology in communication for organisations (including their employees and customers). (4 marks)
   ii) Briefly describe each of the uses. (4 marks)

2. A source, a sink and a channel are the basic elements of a communication system. There are two types of communication system that use these elements.
   i) Identify these two types of systems. (2 marks)
   ii) Describe these systems through an example for each type, stating the elements of communication in parentheses. (4 marks)

3. Communication technology is important in our daily lives. Both individuals and business sectors use communication technology to obtain what they need. However, it has its downside.
   i) Identify three advantages and three disadvantages of communication technology in an organisation. (6 marks)
   ii) Based on your answers above, give two descriptions each how communication technology can be advantageous and disadvantageous to an organisation. (6 marks)

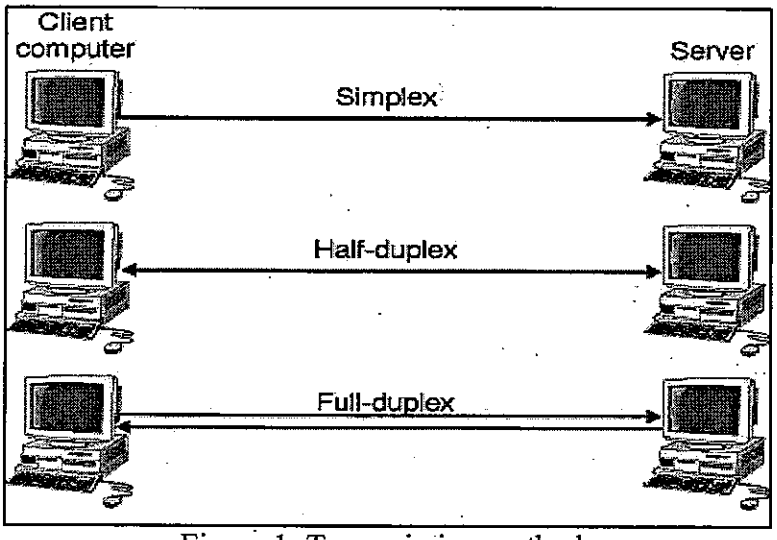
4. 

Figure 1: Transmission methods

Simplex, half duplex and full duplex are three kinds of transmission methods in telecommunications, computer networking and even in Web 2.0. Based on the Figure 1:
   i) State two reasons why full duplex is more advantageous than half duplex. (2 marks)
   ii) Briefly describe each reason. (2 marks)

Continued...

5. Assuming there are two communication technologies: Technology A where the bandwidth of each user is 5 kHz and there is 20 Hz frequency gap located between consecutive users. Technology B where the bandwidth of each user is 10 kHz and there is 50 Hz frequency gap located between consecutive users.
Given that:

Number of users (n) = bandwidth(n) + fg(n-1) ≤ fb

i) Calculate the number of users for each technology for a frequency band of 5 MHz (show clear workings of your calculation). (2 marks)
ii) Based on your answer in i), which technology would be better in terms of number of users for a Marketing Officer who is promoting a new product through radio? (3 marks)

6. Radio, television and mobile phone use *waves* for signal transmission. While radio and television use *radio waves,* mobile phone uses *microwaves.*
Given that:

$$\text{Wavelength } (\lambda) = \frac{\text{velocity}}{\text{frequency}}$$

i) A 10.7 MHz wave for *Device X* is sent through a channel with a propagation velocity of 0.78 c (where c is the speed of light = 3×10^8 m/s). What is the wavelength in this case? (1 mark)
ii) A 5 MHz wave for *Device Y* is sent through a channel with a propagation velocity of 0.5 c (where c is the speed of light = 3×10^8 m/s). What is the wavelength in this case? (1 mark)
iii) If a speaker wants to give a speech in front of a large audience, which one of the two devices would be a better option to use? Explain why. (3 marks)

End of Paper